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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://ewh.ieee.org/r3/floridawc>

Volume 44 - No. 8

August 2001



August PES/IAS Chapter Meeting Presentation of Hartline's AVS Hybrid-Electric Bus



Date: Wednesday, August 8, 2001

Location: Tampa Electric, TECO Hall
702 N. Franklin Street, Tampa

Time: Dinner 6:00, presentation will begin at 6:30.

RSVP: Please reserve by August 6th with Quang Tang
at (813) 739-1222 or q.tang@ieee.org

Cost: \$10.00 for members, \$15 for non-members



Join us for a special evening in downtown Tampa when Hillsborough Area Regional Transit (HART) presents their new Advanced Vehicle Systems (AVS) hybrid-electric bus. The unique feature of this new vehicle is that a **CapStone MicroTurbine™** engine running an on-board generator supplements the main battery power delivery system. This hybrid system allows for significantly increased range when compared to all-electric buses.

The turbine engine used in this bus is extremely clean burning, achieving emission levels that are 88% to 96% below the 2003 EPA standards for diesel engines. The electric motors, of course, produce no pollution in operation. The combination of the two technologies produces an exceptionally clean vehicle with superior performance characteristics.

HART is in the process of receiving and field testing 10 of the new AVS-22 buses. The 19 passenger buses are intended for shorter routes in neighborhoods or congested areas.

The evening will include dinner, a slide presentation, an opportunity to "peek under the hood", and a short ride around downtown. Reserve early as we are expecting a full house.

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All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month. Address all correspondence to:

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Chair's Comment

By Quang Tang

Looking for a new job? Try the new IEEE Job Site at <http://www.ieee.org/jobs>. This job site features the IEEE e-Recruiter? Job service that makes the job-hunting process easier and more effective for technical professional job seekers. The online service, sponsored by IEEE-USA and IEEE Spectrum, allows IEEE members worldwide to create and submit a profile of their background and the characteristics they'd like in a new job. New job postings are continually being added, and the job seeker is notified by e-mail if there is a profile match. And the process can be conducted anonymously. The job service is free for IEEE members. For more information or to register and submit a profile, visit <http://www.ieee.org/jobs>.

Congratulations to John Stankowich. John has been appointed PES/IAS Chapter Treasurer/Secretary. With his experiences, John will focus more in the industrial applications area. John will join PES/IAS officers Art Nordlinger and Ghaff Khazami.

Finally, congratulations to Mr. Ervin L. Nevsimal of Gaither High School for winning the IEEE Educational Activities Board Pre-College Educator Award with the following citation "for teaching and leadership in the Pre-Engineering Program in the Gaither High School, Tampa, Florida".



Students' Corner

By Anthony Webster
IEEE Student Branch President
apwebste@eng.usf.edu

This summer a lot of maintenance work is going on with IEEE USF Student Branch. We are getting ready for an exciting fall semester.

1. Carlo has given a new face to our web page and it is up and running with some minor things to be added soon.
2. Also, Our office is taking on a new look. A new Workstation has been installed. We are working on getting the new computer donation from ECC and a used one from Dr. Wiley. We will be cleaning up and painting sometime within then next couple of weeks.
3. Also we'll be starting the design process for the IEEE T-shirts. You can order yours in advance! The shirts were sold out last semester. Please contact me, Anthony at apwebste@eng.usf.edu. Thank you.



August PES/IAS Chapter Meeting

Gulfstream Gas Pipeline Project

Location: TECO Hall, 702 N. Franklin Street, Tampa

Date/Time: Wednesday, August 22, 2001 at Noon
Lunch will be served.

Cost: \$10 for members, \$15 for non-members

RSVP: Please contact Ghaff Khazami at (813) 739-1221 or
Email GKhazami@seminole-electric.com



Come and join us to find out what the latest is on the Gulfstream Gas Pipeline Project. Our Speaker for this presentation is Mr. George Matzke.

Biography: George Matzke is the Vice President of Marketing for Gulfstream Natural Gas System. Gulfstream Natural Gas System is a joint venture of Duke and Williams. Gulfstream will deliver natural gas from the Mobile Bay area, accessing both Alabama and Mississippi infrastructure, to the center of Florida. In his current capacity, Mr. Matzke has responsibility for the marketing of the project.

Prior to joining Gulfstream Mr. Matzke worked in business development for Progress Energy Corporation, a subsidiary of Florida Progress. Progress Energy focused on developing energy projects with an emphasis on the southeast. He did extensive work on understanding the dynamics of the southeast energy markets especially Florida.

Mr. Matzke has extensive commercial experience in fuels, chemicals, electricity and large capital projects. He has a BSME and an MBA from the University of New York.

USF Power Engineering Courses

The University of South Florida will be offering two courses this fall focused on electric power. **Power System Analysis** (EEL 5250) provides a comprehensive overview of electric utility systems, including timely information on industry trends such as deregulation. **Energy Management Systems** (EEL 4936/6936) explores the methods and technologies involved in monitoring and controlling large interconnected power systems. Both courses fulfill the Continuing Education Rule (Chapter 61G15-22) as approved this past April by the Florida Board of Professional Engineers (www.fbpe.org) for maintaining PE licensure, can be applied toward a Master's degree, and are offered as distance learning courses via FEEDS, the Florida Engineering Education Delivery System (feeds.eng.usf.edu). Please visit the USF Power web site (web.tampabay.rr.com/usfpower) or contact Ralph Fehr at r.fehr@ieee.org for additional details.

2001 Pinellas County District Elementary Health and Science Fair

Twelve young scientists were recognized by the Florida West Coast Section for entries in the 2001 Pinellas County District Elementary Health and Science Fair based on electricity and magnetism. The number of entries in this year's competition was down compared to recent years, but the quality of the projects was outstanding. "The effort put forth by the students and the depth of their understanding truly amazes me," says Ralph Fehr, who served as a judge at the district competition held in May. "It is refreshing to hear an eight-year-old explain how to build an electromagnet. Seeing the curiosity and enthusiasm of these children is incredibly rewarding. It is something that every engineer should experience." **Cameron Lothridge** of Science Center Home School and **Andrew Smith** of Ridgecrest Elementary were awarded \$50 U.S. Savings Bonds from the Section for their outstanding entries. If you are interested in becoming involved as a judge for this or other area science fairs, contact Ralph Fehr (r.fehr@ieee.org) or the Section Professional Activities Chair, Mark McKeage (mark.mckeage@pgnmail.com).

Joint Section & PES/IAS September Meeting

Continuing Education For Professional Engineers

Date/Time: Tuesday, September 11, 2001 at Noon

Location: TECO Hall, 702 N. Franklin Street, Tampa

RSVP: Art Nordlinger at (727) 596-9319 or Email Nordlinger@hotmail.com

Cost: \$10 for members, \$15 for non-members to cover luncheon

The State of Florida has established a requirement that Professional Engineers complete professional development hours as a condition of maintaining a license to practice engineering. We are fortunate to have Dr. Melvin W. Anderson, PHD, P. E. of the University of South Florida and past chair of the Florida Board of Professional Engineers in our community. Dr. Anderson will provide us with the status of this continuing education requirement, and give insight into how professional engineers can earn professional development hours, stay current in the technology of their field of practice, and better serve the public.

Melvin W. Anderson, Ph.D., P.E.

Dr. Anderson is a member and past chair of the Florida Board of Professional Engineers and is the Interim Dean of the College of Engineering at the University of South Florida. In addition, he is the Vice President, Southern Zone of the National Council of Examiners for Engineering and Surveying. Professor Anderson has a Bachelor of Science degree in Civil Engineering from the Virginia Military Institute and Master of Science and Doctor of Philosophy degrees in Civil Engineering from Carnegie Mellon University.

Mel started his teaching career at Louisiana State University prior to joining the USF faculty in 1969. His major area of professional interest is water resources engineering. He is a Past President of the American Water Resources Association and the Florida Engineering Society.

Upcoming Meetings and Tours provided by Florida West Coast PES/IAS Chapter

- September 11, 2001 – Board of Professional Engineers Presentation on PDHs
- September 2001 – Electric Vehicles
- October 2001 – Power Quality Seminar
- October 2001 – Tour of Tasnet Facility
- November 6, 2001 – Liberty Ship Tour and Meeting
- November 29, 2001 – Engineering Ethics
- December 2001 – Utility Load Management Systems
- December 2001 – Elevators Technology



If you have interesting topics or like to tour any facilities, please drop us an email.
Art Nordlinger, PES/IAS Chapter Chair, Nordlinger@hotmail.com
Ghaff Khazami, PES/IAS Chapter Vice Chair, GKhazami@seminole-electric.com
John Stankowich, PES/IAS Chapter Treasurer & Secretary, johns060@qwestmail.com

IEEE-FWCS MTT/AP/ED Chapter August Meeting

“An Overview of Recent Developments in Fractal Antenna Engineering”



When: Thursday, August 16, 2001 6:00 pm

Speaker: Dr. Douglas H. Werner
The Pennsylvania State University
Dept of Electrical Engineering & Applied
Research Laboratory
211A Electrical Engineering
East University Park, PA 16802
(814) 863-2946 dhw@psu.edu

ABSTRACT: *Fractal electrodynamics* is a relatively new and rapidly growing field of research that deals with combining attributes of fractal geometry with Maxwell's theory of electromagnetism. One of the newest areas of fractal electrodynamics research concerns its application to antenna engineering, which promises to yield a rich class of new designs for multiband antenna elements as well as arrays (D.H. Werner and R. Mittra, *Frontiers in Electromagnetics*, IEEE Press, 2000). This talk will present an overview of research in the area of fractal antennas. Recent advancements in the fundamental theory and associated design methodologies for fractal antennas will also be discussed.

Various fractal design schemes will be considered for antenna elements that, due to self-similarity in their geometrical structure, have a multiplicity of resonances over some predetermined operating bandwidth. In other words, these fractal antenna elements exhibit multiband or, in some cases, even broadband behavior, which is directly linked to the fact that their main geometrical feature is repeated at many different scales within the structure. Innovative techniques for developing compact low-profile antenna elements using fractal geometric concepts will also be discussed.

Another topic that will be addressed in this talk concerns the use of fractal concepts in the design of antenna arrays. Fractal arrays offer several attractive advantages over conventional array designs including multiband/broadband properties, the availability of recursive algorithms for rapid radiation pattern computations, schemes for realizing practical low sidelobe designs, systematic approaches to thinning, and efficient design strategies for large planar arrays. Finally, the design of multiband fractal frequency selective surfaces will also be briefly discussed.

BIOGRAPHY: Dr. Douglas H. Werner, joined the faculty of The Pennsylvania State University Department of Electrical Engineering as an Associate Professor in July of 1998. He is a member of the Communications and Space Sciences Lab (CSSL) and is affiliated with the Electromagnetics Communication Research Lab. He also has a joint appointment as a Senior Research with the Electromagnetics and Environmental Effects Department of the Applied Research Laboratory at Penn State, where he has worked since 1990. His research interests include theoretical and computational electromagnetics with applications to antenna theory and design, microwaves, wireless and personal communication systems, electromagnetic wave interactions with complex materials, fractal and knot electrodynamics, and genetic algorithms.

In 1992, the Prof. Werner developed an exact solution for a long standing problem in antenna theory and has made several contributions, based on this exact analysis, which have led to the development of generalized method of moments formulations for the efficient and accurate computational modeling of cylindrical wire antenna structures. This work has received national as well as international recognition and is the subject of an invited book chapter entitled Analytical and Numerical Methods for Evaluating Electromagnetic Field Integrals Associated with Current-Carrying Wire Antennas. This work has also led to several research contracts for the development of a new computational electromagnetics code to be used by the US Navy and other government agencies for the analysis and design of a wide variety of complex antenna systems, including those used in shipboard applications.

Continued on next page

MTT/AP/ED August Meeting Continued

Prof. Werner has also made several contributions to the newly emerging area of research known as fractal electrodynamics, which combines fractal geometric concepts with Maxwell's theory of electromagnetism. He has developed several analysis techniques useful for solving fractal electrodynamics problems and has been applying these techniques to study a new class of electromagnetic radiation, propagation and scattering problems. Most recently he has received international recognition for the development of new designs for multiband/broadband fractal antenna elements as well as fractal arrays. Other areas of active research by Prof. Werner include the development of computational modeling techniques for the analysis and design of fractal frequency selective surfaces, conformal antennas mounted on curved platforms, the application of genetic algorithm optimization techniques to the solution of complex engineering electromagnetics problems, and the development of novel electromagnetic absorbing materials.

Prof. Werner received the 1993 Applied Computational Electromagnetics Society (ACES) Best Paper Award. He was also the recipient of a 1993 URSI International Young Scientist Award. In 1994, Dr. Werner received The Pennsylvania State University Applied Research Laboratory Outstanding Publication Award. He has published numerous technical papers and proceedings articles and is the author of six book chapters. He recently published a new book for IEEE Press entitled *Frontiers in Electromagnetics*. He has also contributed a chapter for a Wiley Inter-science book entitled *Electromagnetic Optimization by Genetic Algorithms* and has been invited to prepare a monograph on *Fractal Antennas*. In March 2000 Prof. Werner was the recipient of a College of Engineering PSES Outstanding Research Award. He was also recently presented with an IEEE Central Pennsylvania Section Millennium Medal.

Prof. Werner served as the Technical Program Chair for the Applied Computational Electromagnetics Society (ACES) 2000 Conference, is an Associate Editor of *Radio Science*, a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), a member of the American Geophysical Union (AGU), URSI Commissions B and G, the Applied Computational Electromagnetics Society, Eta Kappa Nu, Tau Beta Pi and Sigma Xi.

MEETING LOCATION: Raytheon Systems Company St. Petersburg, 1501 72nd Street North, St. Petersburg. Gill Robb Conference Room.

PLEASE RSVP: Leave name & country of citizenship with Shawn O'Brien at (727) 302-3493, e-mail: skoa@eci.esys.com or Ed Grimes at 727.784.3998 x158, email: edg@xetron.com. Bring a guest; non-members welcome!

DIRECTIONS:

From Tampa, take I-75 South to I-275 south across Tampa Bay to Exit 12 (22nd Ave N.). From Sarasota, take I-75 North to I-275 north over the Sunshine Skyway Bridge to Exit 12 (22nd Ave N.). Turn west on 22nd Ave. past Tyrone Mall to 72nd Street N. Turn left at the traffic light to the Engineering building. Park in the lot farthest south of complex. The meeting will be held in the Gill Robb Wilson Conference Room – 2nd Floor – Engineering.



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Upcoming Life Member Meeting!

Mark your calendar to attend our next Joint Section and Life Member Chapter Luncheon meeting Tuesday, **September 25, 2001**, at Florida Gulf Coast University. Our guest speakers will be Dr. Jerome Jackson, the Program Director of the Whitaker Center for Science, Mathematics and Technology at FGCU and Dr. Jack Crocker, Dean of Graduate Studies and Continual Learning. In addition, we hope to have Dr. Michael Fauerbach give us a guided tour of Whitaker Hall and the FGCU observatory.

Full details will be available in the next issue of the Signal.

National Science Foundation Issues Grant For Deans Summit

The National Science Foundation (NSF) has issued a US\$121,500 grant to the IEEE for "Taking the Lead," a deans summit on education for a technological world. Other grants for the summit have been received from the United Engineering Foundation, IEEE Life Members Committee and the Semiconductor Industry Association.

For more information, visit "<http://www.ieee.org/eab/precollege/deansummit/index.htm>" or contact Douglas Gorham, IEEE Educational Activities, at +1 941 753 4758 or Email [Doug at d.g.gorham@ieee.org](mailto:d.g.gorham@ieee.org)."

Education Activities Board Announces Award

Erv Nevsimal, from Gaither High School in Hillsborough County, was just announced as the winner of the IEEE Educational Activities Board **Pre-College Educator Award**. Mr. Nevsimal was the driving force behind the establishment of a pre-college engineering magnet program at Gaither High School. Gaither has an impressive curriculum, laboratory, and satellite receiving facility for the engineering students. In addition, the students coop with area firms during the second half of their senior year. The Florida West Coast Section nominated Mr. Nevsimal for the award because of the excellent experiences many IEEE members have had working with Gaither's students. Congratulations to Mr. Nevsimal, and to Gaither High School.

Upcoming Section Meeting! Shaping the Future Through Philanthropy

Mark your calendar for Thursday, 18 October and Friday, 19 October. Please join us for lunch and a conversation about charitable giving in income and estate planning.

Our dialogue will address the mutual benefits to you, your family and your favorite charitable organizations, as well as a number of questions including:

- Is it possible to make charitable bequests and still provide for my family?
- Can retirement assets be used as charitable gifts?
- How can charitable giving help to minimize income and estate taxes?
- Can a charitable giving plan help to supplement my family's income needs?
- What is the impact of recent tax legislation?

The session will be an open discussion, so we welcome questions and personal stories about how you have chosen to honor your philanthropic interests. This information session is brought to you by the IEEE Foundation.

ATTENTION Retired Engineers!

Tired of golf, golf and more golf?
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ETCO, Inc. Research & Development
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Come share your experience at our newly
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Just an old fashion "pickle barrel" chat.

Every 2nd Wednesday of the month from 9 - 11am
Next event will be on **August 8, 2001**
You can find us at

6300 Tower Lane, Suite 12
Sarasota, FL
(941) 379-8988
Ask for Brian Stumm

Three Candidates in Race for Division IX Director

Every two years society members have an opportunity to vote for a director to represent the society's technical division on the Technical Activities Board and in the IEEE Board of Directors. VTS is in Division IX, the Signals and Applications division, with five other societies: Aerospace & Electronic Systems, Geoscience & Remote Sensing, Oceanic Engineering, Signal Processing, and Ultrasonics, Ferroelectrics & Frequency Control.

The ballot members will receive in September will offer three candidates for Division IX director: **George F. McClure, John Vig, and Glen N. Williams**. Their principal societies are, respectively, VTS, UFFC, and OE.

George McClure, a past VTS president and current elected board member, observes that the last time VTS had a member of its board on the IEEE Board of Directors was in 1989-1990. That was Art Goldsmith, but because of a different arrangement of societies in divisions at that time, he represented the Engineering Management Society rather than VTS. George's current VTS assignments include the conference board, long-range planning committee, publicity and public relations, and assisting in member recruiting and retention, as well as in strengthening chapter relations, a priority recommendation from the 1999 Sections Congress.

He chaired two VT annual conferences, in 1977 and 1990, both in Orlando. For the 1999 Sections Congress George gave a presentation on the benefits to employers of their members' IEEE participation. This presentation is available at the IEEE website under the URL http://www.ieee.org/organizations/rab/sc/Presentations-html/Green_Track/mccluree/sld001.htm

A past editor of the "IEEE Transactions on Vehicular Technology," George currently serves as editor of technology policy for IEEE-USA. In 1999 he received the highest award bestowed by IEEE-USA, for distinguished contributions to engineering professionalism. He was co-editor of "*Land-Mobile Communications Engineering*," sponsored by VTS and published by IEEE Press.

A Life Fellow of IEEE, and recipient of both IEEE's Third Millennium Medal and Centennial Medal, George retired from Martin Marietta Corporation after more than 30 years in systems engineering and program management in aerospace and communications-electronics. The development of mobile military communications systems there led to commercial mobile telephone applications for which George received two patent awards.

His view is that technical societies should focus their activities to provide the greatest benefit to the members. This includes, besides the purely technical information dissemination role in publications and conferences, promoting a broader choice of education opportunities, expanded Newsletter content, and better chapter linkage and support. Working with other boards, such as Education Activities, and with other committees such as the RAB/TAB Section-Chapter Support Committee, societies can assist in the development of member mid-career education opportunities and strengthen their relations with their chapters.



George F. McClure

Current problems he sees that must be addressed include the increased levy on society assets by IEEE to finance growing administrative costs. In some cases, the trendline indicates that societies will be totally stripped of assets in five or six years unless steps are taken to reverse the trend. Funds removed from societies are not available to fund benefits to members in publications, technical conferences, chapter development and support, and continuing education opportunities. George believes that problem-solving to reduce the levies will work to allow societies more autonomy in serving their members. Healthy growing societies translate into a healthy IEEE as well, making the resolution of the financial problems the first priority.

George McClure has been nominated to serve on the IEEE Audit Committee, contingent on his election as Division IX director, so will be well-positioned to begin his budget problem-solving.

Brain Teaser Challenge Column

By Butch Shadwell

July BTC Solution

Because of my travel schedule, I have had to write this column before anyone has had a chance to read the last one. In last month's BTC I challenged my readers to think of ways one could power a small electronic device embedded inside a persons body. I want to wait until you readers have had a chance to send me your ideas before I give you mine. So, please check this location next month to read what ideas have been sent in.

August BTC

Being a devotee of classical literature, I have been known to read a Shakespeare comic book from time to time. As I recall in one story there was a witch. Not the kind that rides a broom, but one that can see the future and stuff. Anyway this witch has a warning for this guy with the salad name, "Beware the Ides of March". I guess in those days, they had a special name for every day of the month, besides the number I mean. Maybe they hadn't started numbering them yet. Anyway, it turns out that the Ides of a month falls on the 15th these days. So, I was provoked to wax philosophical since I am writing this on the 15th.

One of the oldest and most interesting philosophical questions is whether or not we are real. That is, since everything we know about the physical world is a matter of perception, the question is "are we deceived?" Personally, I have resolved this question through the judicious use of my brother's smelly feet. The supposition is that no one could have conceived of such a putrid odor in his wildest imagination, so I accept this experience is due to sensory stimulation. I suspect my brother's feet have become home for a variety of flora and fauna who's metabolic byproducts are responsible for the smell. Some of these airborne offenders may be inorganic compounds and some may be organic. Now for your challenge, how many of you can think of existing technologies that can produce an electrical signal when exposed to airborne contaminants of this sort? Please identify the sensor(s) and perhaps offer a brief description of its operation. Consider CO detectors and other gases sensors.

Questions or comments to the Brain Teaser Challenge, please contact Butch Shadwell at 904-223-4465 (v), 904-223-4510 (fax), b.shadwell@ieee.org (email), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. <http://www.se.mediaone.net/~butchs/>



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**2001 Review Seminars For
PE Electrical and EIT/FE
October 26 & 27 Examinations**

Review seminars for the PE (Electrical) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will begin:
Monday, Aug 6 for the EIT/FE Exam & Thursday, August 9 for the EE Exam. Seminars are conducted from 7-10 P.M. (Monday or Thursday) for ten weeks. The registration fee is \$300 and includes text. The seminars will be held on the main USF campus in Tampa with several viewing sites available via FEEDS. Videos of all classes will also be available to registered students.

To register, contact: Alan M. Keith, P.E., PO Box 14042, (EC37), St Pete, FL 33733.

Alan.M.Keith@pgnmail.com

Phone (727) 384-7937, FAX (727) 384-7994
Pinellas Chapter, Fla. Engineering Society

August 2001 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7 <i>EXCOM Mtg TECO Center At 5:30 PM Guests Are Always Welcome!</i>	8 <i>Joint Section & PES/IAS Meeting – 6PM At Teco Hall “Hybrid Bus”</i>	9	10 <i>Material Due For Next Month’s Suncoast Signal Newsletter</i>	11
12	13	14	15	16 <i>MTT/AP/ED Meeting – 6PM At Raytheon Systems Company</i>	17	18
19	20	21	22 <i>PES/IAS Meeting – Noon At TECO Hall “Gulfstream Gas Project”</i>	23	24	25
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